



SOUNDSTREAM[®]

SA 80

SA 164

Power Amplifiers

OWNERS MANUAL AND
INSTALLATION GUIDE

SOUNDSTREAM[®]

T E C H N O L O G I E S

CONGRATULATIONS!

You now own a Soundstream Amplifier, the result of a unique design and engineering philosophy.

To maximize the performance of your system, we recommend that you thoroughly acquaint yourself with its capabilities and features. Please retain this manual and your sales and installation receipts for future reference.

Soundstream amplifiers are the result of American craftsmanship and the highest quality control standards, and when properly installed, will provide you with many years of listening pleasure. Please record the following information which will help protect your investment should your amplifier ever need replacement or service..

Serial # _____

Dealer's Name _____

Date of Purchase _____

Installation Shop _____

Installation Date _____

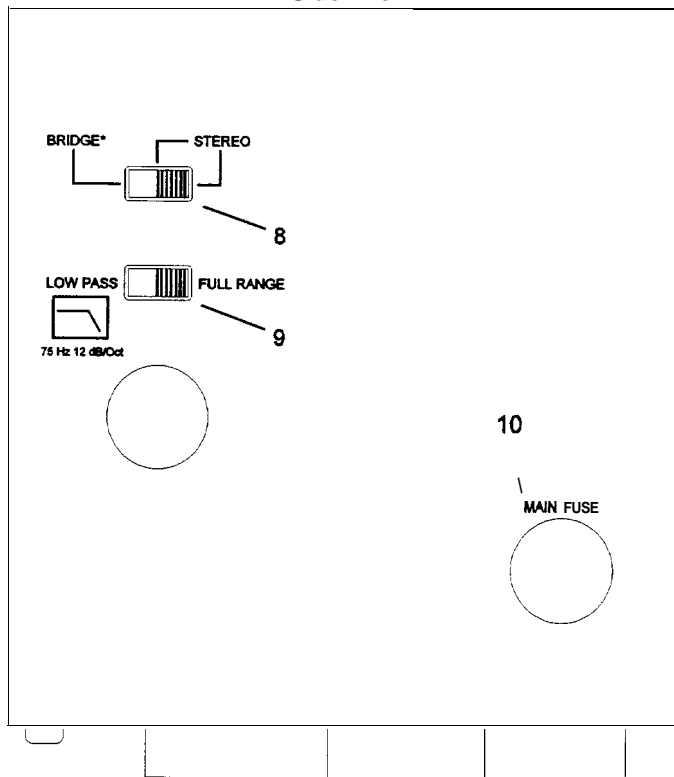
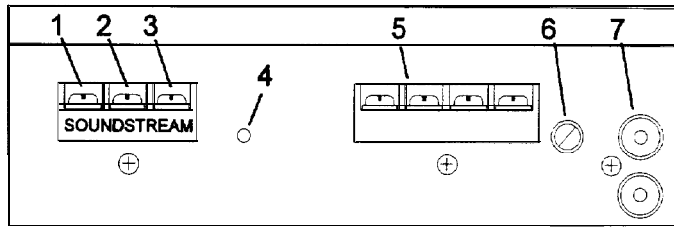
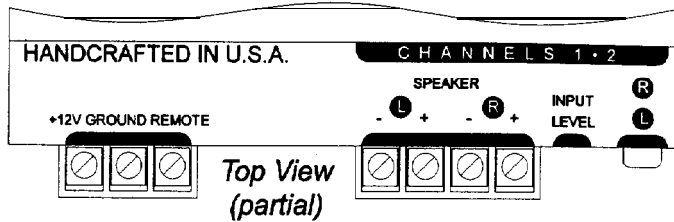
CAUTION!

Prolonged listening at high levels may result in hearing loss. Even though your new Soundstream amplifier sounds better than anything you've ever heard, exercise caution to prevent hearing damage.

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SA-80

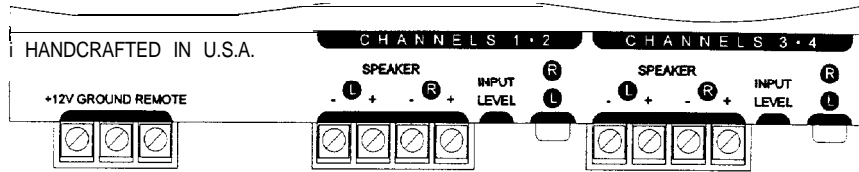


Underside View

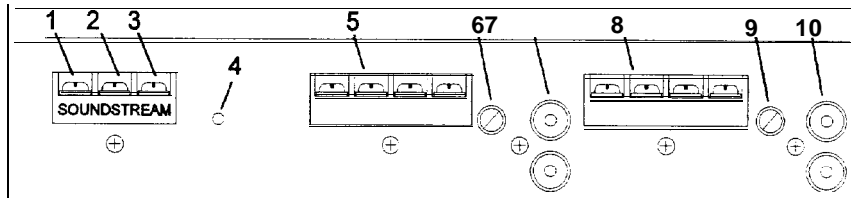
Key to Callouts

1. **+12V** - Connected to fuse or circuit breaker, then battery's positive post.
2. Ground - Main ground connection. Bolt to a clean chassis ground in the vehicle.
3. Remote - Remote turn-on input from the head unit. Accepts +12V.
4. LED - Indicates amplifier power on.
5. Speaker **Output** Connections - Channels 1 & 2
6. Input Level - Variable from 100mV to 2.5V.
7. Inputs - Right and left channel inputs; only right channel input used in "Mono" mode.
6. [underside] Stereo/Bridged Mono Switch - Select "Mono" for bridged operation (use only right channel input or stereo position for 2-channel Stereo or Mixed Mono operation).
9. [underside] Amplifier Crossover Switch - Select low pass or full range operation.
10. [underside] Main Fuse - Main power supply fuse. Replace only with same fuse value.

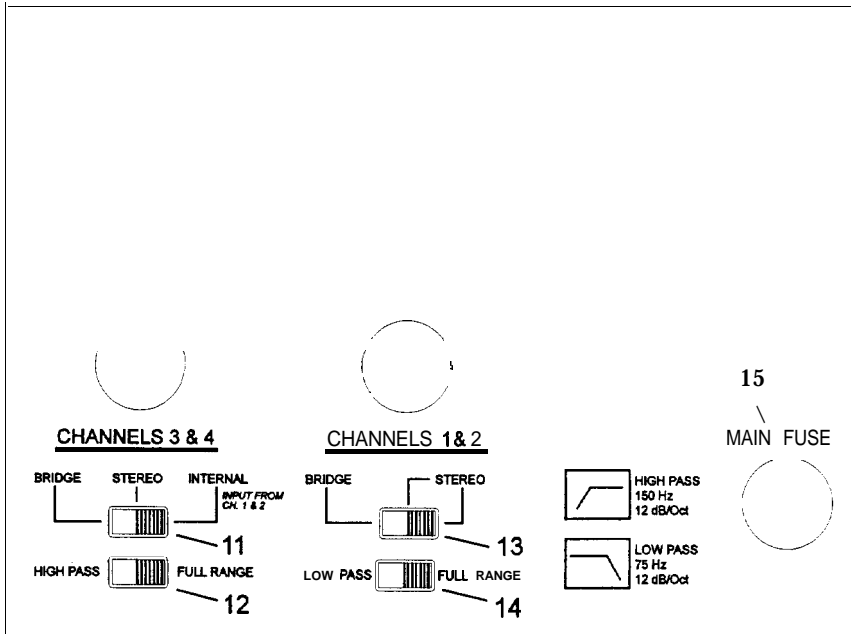
SA•164



Top View (partial)



Side View



Underside View

Key to Callouts

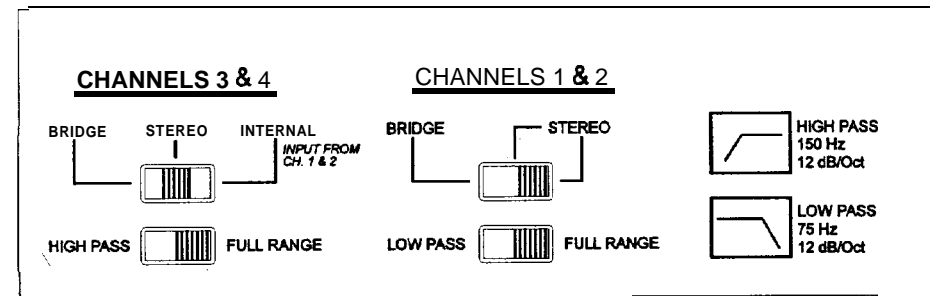
- +12V** - Connected to fuse or circuit breaker, then battery's positive post.
- Ground - Main ground connection. Bolt to a clean chassis ground in the vehicle.
- Remote - Remote turn-on input from the head unit. Accepts **+12V**.
- LED - Indicates amplifier power on.
- Speaker Output Connections - Channels 1 & 2
- Input Level - Channels 1 & 2; variable from 100mV to 2.5V.
- Inputs - Channels 1 & 2; right and left channel inputs; only right channel input used in "Mono" mode.
- Speaker **Output Connections** - Channels 3 & 4
- Input Level - Channels 3 & 4; variable from 100mV to 2.5V
- Inputs - Channels 3 & 4; right and left channel inputs; only right channel input used in "Mono" mode
- [underside] Stereo/Bridged Mono/Internal Switch (ch 3 & 4) - Select "Mono" for bridged operation (use only right channel input or stereo position for 2-channel Stereo or Mixed Mono operation). "Internal" allows you to use the inputs to channels 1 & 2 to feed channels 3 & 4.
- [underside] Amplifier Crossover Switch - Channels 3 & 4; select high pass or full range operation.
- [underside] Stereo/Bridged Mono/Remote Switch - Channels 1 & 2; select "Mono" for bridged operation (use only right channel input or stereo position for 2-channel Stereo or Mixed Mono operation).
- [underside] Amplifier Crossover Switch - Channels 1 & 2; select low pass or full range operation.
- [underside] Main Fuse - Main power supply fuse. Replace only with same fuse value.

INSTALLATION STEP 1

SETTING THE CROSSOVER MODES

The Soundstream SA•80 & 164 incorporate a defeatable electronic crossover for each pair of channels. The SA•164 amplifier can drive a complete system without need of an outboard electronic crossover.

Before installing the amplifier, make certain the switches on the bottom are set to the correct positions.



SA•164 shown

DESIGN FEATURES

- ◆ **Handcrafted in the U.S.A. with mil-spec** glass epoxy circuit boards, low-loss connections, gold-plated input connectors, and metal film resistors.
- ◆ **Darlington High Current Discrete Output Topology** - Soundstream's "overbuilding" of the output section incorporates Darlington output devices sandwiched between the circuit board and the heatsink in a design called **Chassisink™** to ensure cool, efficient amplifier operation.
- ◆ **Mixed Mono Capable** so you can simultaneously drive a stereo and mono load (satellites and subwoofer).
- ◆ **2 Ohm Drive Ability** - Soundstream amplifiers are designed to drive loads down to 2 Ohms stereo and 4 Ohms bridged.
- ◆ **Built-in Staggered Asymmetrical Crossover** - Built in 2-way (1-way on SA•80) electronic crossover is designed to send either high or low pass information to the amplifier.
- ◆ **Drive Delay™ Muted Turn-on/off Circuit** - A unique circuit which completely eliminates any amplifier-related turn-on/off noises.
- ◆ **Flexible Input Sensitivity** - Accepts input voltages from 100 mV to 2.5 V, which permits maximum output from amplifier with virtually any source unit.

	<i>Power 4 ohms</i>	<i>Power 2 ohms</i>	<i>Bridged Power 4 ohms</i>
SA•80	40w x 2	60w x 2	120w x 1
SA•164	40w x 4	60w x 4	120w x 2

LOW PASS

The low pass crossover is used for sending only low frequency information to particular speakers. Activate the low pass crossover if you intend to drive subwoofers.

HIGH PASS (SA•164)

The high pass crossover is used for sending only midrange and high frequency information to particular speakers. Activate the high pass crossover if you intend to drive satellite or coaxial speakers in the system along with subwoofers driven off channels 1 & 2 in low pass. Even if your system does not include subwoofers, it may be helpful to activate the high pass crossover with smaller speakers to protect them from low frequency information.

INSTALLATION STEP 2

SELECTING INPUT MODES

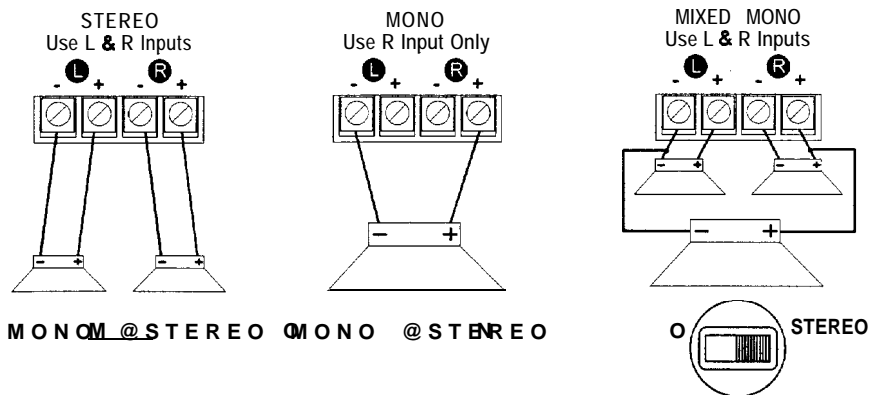
The SA•164 can be driven with either one or two pairs of stereo inputs. If your source unit has front and rear outputs, you can take advantage of its fading capability by driving the multi-channel amplifiers with two pairs of input. When operating your Soundstream amplifier in mono, only one input is necessary.

On Soundstream amplifiers, pairs of channels may be bridged for mono operation. To do so, simply put the stereo switch into the "mono" position and follow the mono wiring (Right Positive goes to speaker's positive; Left Negative goes to speaker negative).

Stereo for normal operation.

Mixed-Mono in order to drive stereo and mono simultaneously; works well for center channels. It can be used anytime you need a summed mono channel.

Bridged Mono for dedicated single channel operation: ideal for driving subwoofers. It is also used when large amounts of power are necessary for single speakers. In bridged mono, **only the right channel input (per pair of channels) is active.**



In bridged mono, only the right channel input is active.

For system examples and diagrams, see pages 15 - 17.

INSTALLATION STEP 3

WIRING

POWER AND GROUND

To assure maximum output from your amplifier, use high quality, low-loss power and ground cables. Soundstream SA amplifiers incorporate gold-plated barrier strips for maximum power transfer and protection from corrosion. The screw terminals back out for use with spade & ring terminals, as well as bare wire. **Determine from the chart below the minimum gauge power and ground wire for your application.**

	up to 10'	up to 20'
SA•80	Soundstream Power80 or Power100 (or 8 or 10 ga.)	Soundstream Power80 (8 ga.)
SA•164	Soundstream Power80 or Power100 (or 8 or 10 ga.)	Soundstream Power80 (8 ga.)

CIRCUIT BREAKERS/FUSES

EXTERNAL

Like all audio components, the Soundstream amplifiers must be fused near the battery. A fuse or circuit breaker must be located within 18" of the battery. This will prevent a fire in the event of a **shorted cable**. See the chart below to **determine the value of your battery fuse/circuit breaker.**

Model	Amplifier Fuse	Battery Fuse/ Circuit Breaker
SA•80	15 amp automotive	20 amp
SA•164	25 amp automotive	30 amp

(Continued on page 12)

INSTALLATION STEP 4

INSTALLATION AND MOUNTING

(Continued from page 11)

INTERNAL

The Soundstream amplifiers are fused internally with automotive-type fuses. The fuses are accessible via a plastic plug on the bottom of the amplifier. Never replace the fuses with a higher value than what is supplied. This may result in amplifier damage and will void the warranty!

REMOTE TURN-ON

Connect the "Remote" to the turn-on lead from the source unit. When +12 volts is received, the amplifier will turn on. Soundstream's Remote200 20 gauge turn on lead works perfectly.

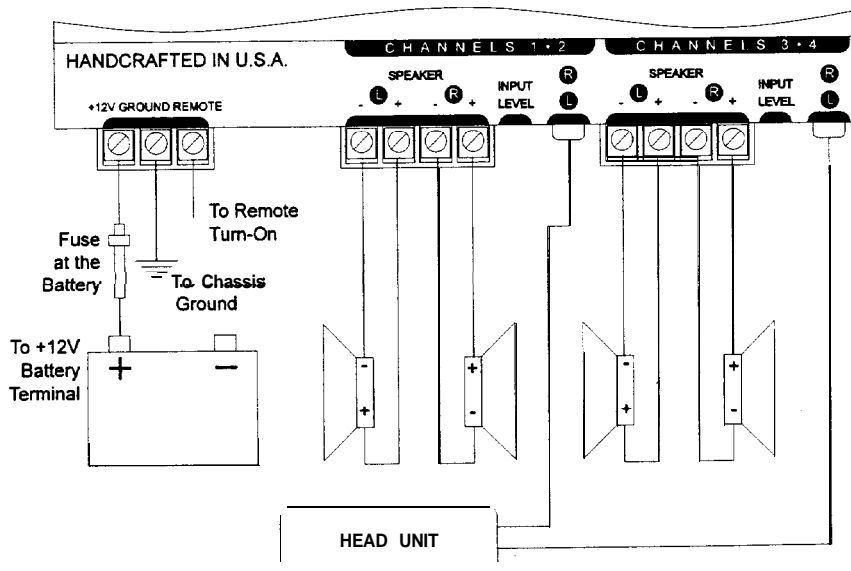
SIGNAL CABLE

Depending on your application, you may use one, two, or three pairs of signal cables to drive your amplifier. To guarantee optimum performance, use a high-quality cable that will be easy to install and has minimal signal loss such as Soundstream's DL-1 or SL-1.

SPEAKER CABLE

Use a high quality, flexible, multi-strand cable for best performance and longevity. Soundstream Speaker120 & 160 (12 and 16 gauge) are ideal.

WIRING DIAGRAM



I. AMPLIFIER LOCATION

The SA amplifiers employ highly efficient circuitry and a unique Chassisink™ design to maintain lower operating temperatures. Additional cooling may be required if the amplifier is located in a tightly confined area, or when driving especially low impedance loads at extremely high levels.

When mounting the amplifier, it should be securely mounted to either a panel in the vehicle or an amp board or rack that is securely mounted to the vehicle. The mounting location should be either in the passenger compartment or in the trunk of the vehicle, away from moisture, stray or moving objects, and major electrical components. To provide adequate ventilation, mount the amplifier so that there are at least two inches of freely circulating air above and to the sides of it.

2. SWITCHES

Set Input and Crossover switches to the appropriate positions (see pages 15 - 17).

3. MOUNTING THE AMPLIFIER

- Using the amplifier as a template, mark the mounting surface.
- Remove the amplifier and drill the holes.
- Mount the amplifier to the surface using the provided hardware.

4. WIRING

- Run and connect the audio signal and remote turn-on cables to the amplifier from the source unit.
- Carefully run the positive cable **from the amplifier to a fuse or circuit breaker within 18 inches of the battery.**
- Then connect the fuse or circuit breaker to the battery. Leave the circuit breaker off or the fuse out until everything is bolted down.
- Secure the ground cable to a solid chassis ground on the vehicle. It may be necessary to sand paint down to raw metal for a good connection.
- Double check each and every connection!
- Re-connect the fuse or circuit breaker.

5. POWER UP

Power up the system and look at the LED and it should be lit. There may be a 2 - 3 second delay from the time the source unit is turned on to the time the LED on the amp turns on, which is normal. Once the amplifier power LED is on and the source unit is playing, you should have sound coming from the speakers.

INSTALLATION STEP 5

LEVEL SETTING

The input levels are adjusted by means of the input level controls located on the front of the amplifier.

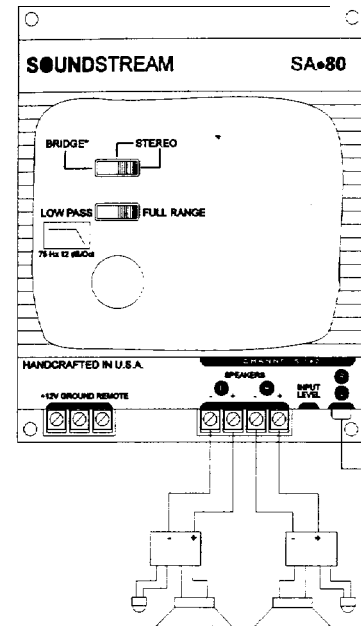
In the ideal situation, all components in the audio system reach maximum undistorted output at the same time. The reason is because an amplifier will only make what comes into it bigger. So, if you send it a distorted signal from the head unit, it is going to amplify distorted information. The same thing holds true if an outboard processor or crossover begins to distort before you have maximum output from the amplifier. By setting all components to reach clipping at the same time, you can maximize the output of your system.

Follow the below procedure for the quickest, easiest means of setting the levels:

1. Turn the amp's input levels to minimum position (fully counter-clockwise).
2. Set source unit volume to approximately $\frac{3}{4}$ of full volume.
3. While playing dynamic source material, slowly increase the amplifier's input level until a near maximum undistorted level is heard in the system.

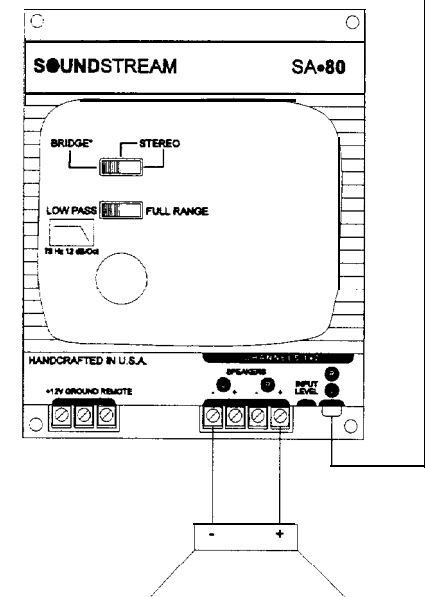
NOTE: Even though the S/N ratio with low output sources is better with the Soundstream amplifiers than others, your best combination of output level and Signal to Noise ratio will be achieved when the input levels are set between 500 mV and 2.5 V.

HEAD UNIT



SA-80
Stereo driving 1 pair of speakers in full range

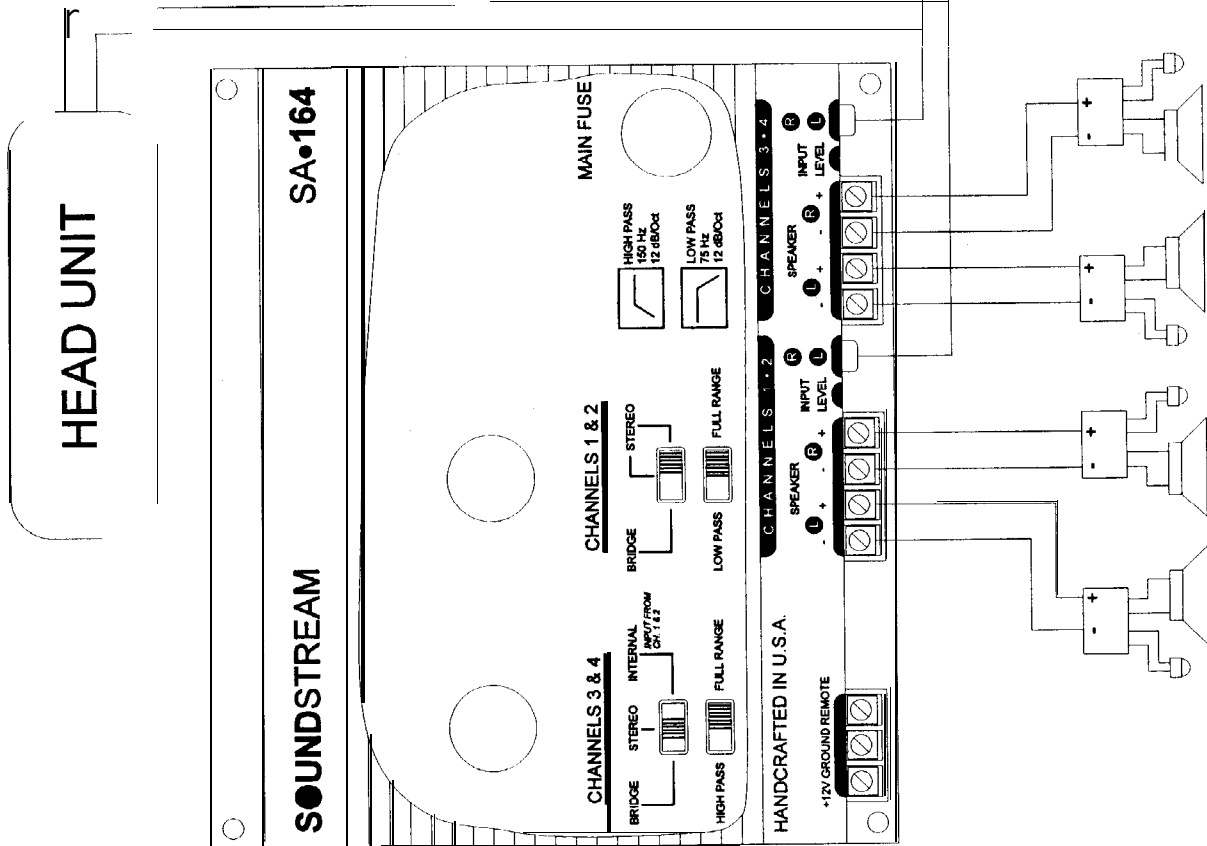
HEAD UNIT



SA-80
Bridged mono with amp in low pass

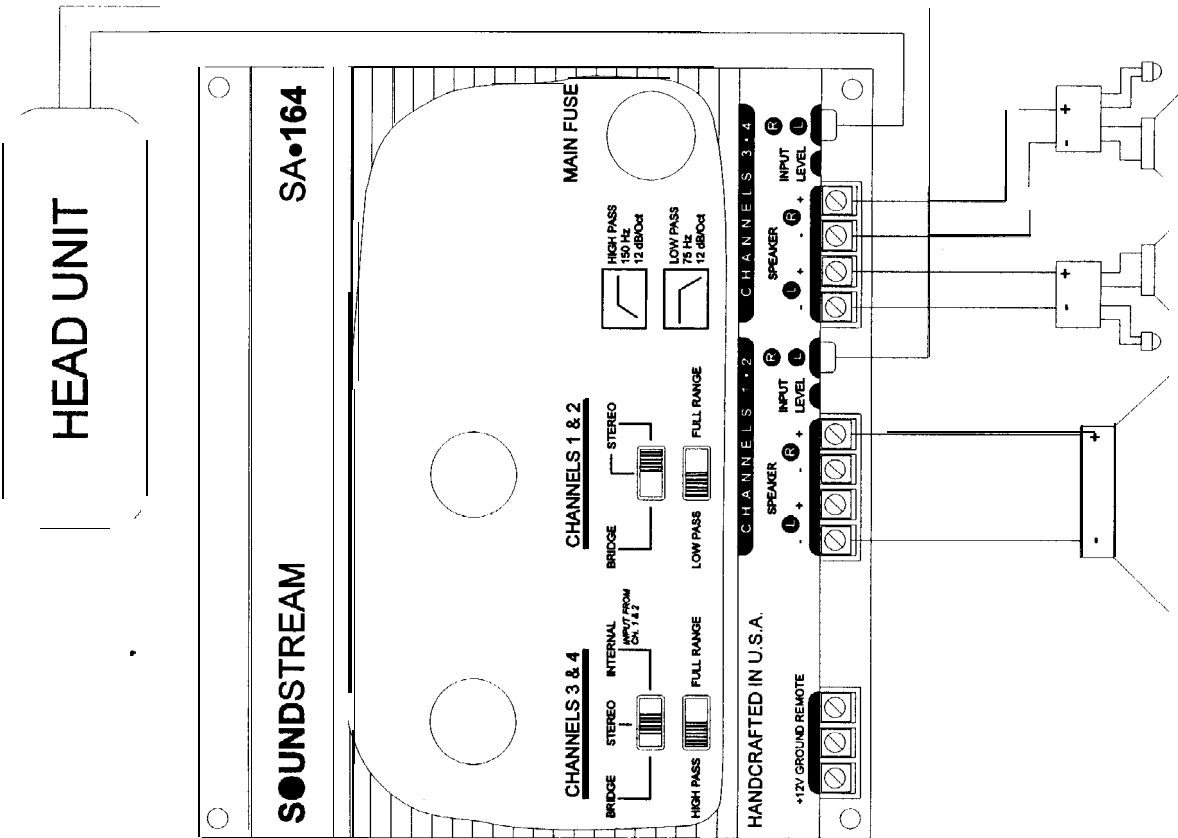
SA•164

4 channels of input with 4 channels of full range



SA•164

4 channels of input with 2 channels in high pass, 2 channels connected as mono in low pass with stereo input



PROTECTION CIRCUITRY

Your SA amplifier is protected against both overheating and short circuits by means of the following circuits:

- Main power supply fuses.
- Speaker output circuit breakers.
- A fail-safe thermal protection circuit activating at 95°C.

NOTE: If you experience blown main power supply fuses, DO NOT increase values beyond the original values! Doing so will void your warranty and may damage your amplifier.

TROUBLESHOOTING

PROBLEM	CAUSE
No sound and LED is not lit	<ul style="list-style-type: none"> • no power or ground at amp • no remote turn-on signal • blown fuse near battery • blown amp power supply fuse
Repeatedly blown amp fuse, frequent activation of Thermal Protection Circuit	<ul style="list-style-type: none"> • check speaker configuration—impedance may be less than 2 ohms stereo or 4 ohms mono • speaker or leads may be shorted • verify adequate amplifier ventilation
No sound from channels 3 & 4 with 2 channels of input	<ul style="list-style-type: none"> • check input settings on bottom Of amplifier-switch should be set to internal inputs "1 & 2"

SERVICE

Your Soundstream amplifier is protected by a limited warranty. Please read the enclosed warranty card.

SPECIFICATIONS

	Power 4 ohms	Power 2 ohms	Bridged Power 4 ohms
SA•80	40w x 2	60w x 2	120w x 1
SA• 164	40w x 4	60w x 4	120w x 2

THD	< 0.1%
Signal to Noise	> 100 dB
Frequency Response	20 Hz to 20 kHz +/- 0.5 dB
Stereo Separation	> 90 dB
Damping	> 200
Input Sensitivity	100 mV - 2.5 V
Input Impedance	12 k ohms

CROSSOVER SPECIFICATIONS

High Pass: 12 dB/octave, 150 Hz

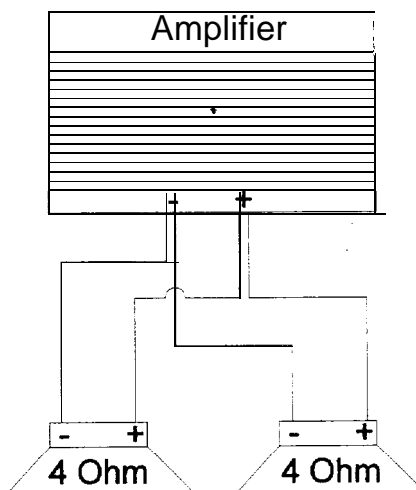
Low Pass: 12 dB/octave, 75 Hz

DIMENSIONS

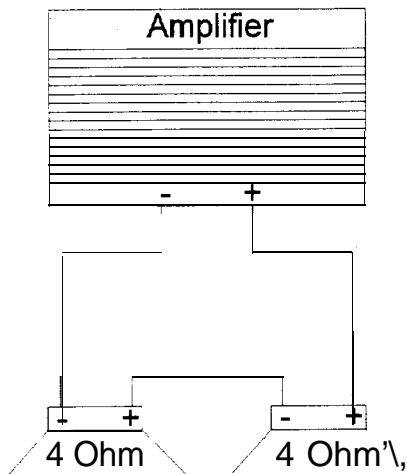
SA•80: 6-5/8" W x 8-3/16" D x 2-3/16" H

SA•164: 9-5/8" W x 8-3/16" D x 2-3/16" H

PARALLEL/SERIES WIRING DIAGRAMS



two 4 ohm woofers
in parallel = **2 ohms**



two 4 ohm woofers
in series = **8 ohms**

SOUNDSTREAM[®]

T E C H N O L O G I E S

SOUNDSTREAM TECHNOLOGIES

120 Blue Ravine Road · Folsom · California 95630 USA

ph 916.351.1288 fax 916.351.0414 ver.12395a